

REMARKS

Claims 11 - 20 have been cancelled in accordance with the election filed on March 4, 2003. Claims 3 - 8, and 10, are herein amended to depend from Claim 2 to correct a typographical error in the original application. Claim 10 is further amended to correct a typographical error, wherein "volume of water" is replaced by "volume of DI water." New Claims 21- 30 are herein added, which new claims include no new matter. Claims 21-30 depend from Claim 2, which the Applicant believes is in condition for allowance as argued below.

1. Objection to the Drawings.

The Office Action objected to the drawings stating that "some texts are missing from Figures 2 and 3." There is no requirement that figures include text. The elements included in Figure 2 are described in paragraph 0011, and the elements included in figure 3 are described in paragraph 0015, in the original specification. The Applicant therefore respectfully requests that the Examiner withdraw this grounds of rejection.

2. Claims 1-10 were rejected based on 35 U.S.C. 112, second paragraph.

Claims 1-10 were rejected based on 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention.

The Office Action questioned the limitation of "completing formation of the semiconductor device" recited in Claim 1. The Applicant respectfully traverses this rejection. The Paragraph 0006 of the original specification describes a method for fabricating a semiconductor device, including a step of completing fabrication of the semiconductor device. The recitation of completing the device merely limits the claim to a method including a step of completing the device. Therefore, the recitation of "completing formation of the semiconductor device" in Claim 1 is supported by the specification and narrows the method to include this step.

The Applicant respectfully requests that the Examiner withdraw this grounds for rejection.

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The Office Action questioned what is recited through the term “thin” in Claim 1. The Applicant respectfully traverses this rejection. Paragraph 0005 of the original specification describes forming a Cu-Zn alloy thin film. The recitation of a “Cu-Zn alloy thin film” in Claim 1 is therefore supported by the specification. The Applicant respectfully requests that the Examiner
5 withdraw this grounds for rejection.

The Office Action questioned the presence of the term “essentially” in Claims 3, 5, 6, and 7. The Applicant respectfully traverses this rejection. The recitation of “group consisting essentially” has become a common practice in claim drafting. A search of the USPTO patent data base for patents with claims including the phrase “group consisting essentially” yields over
10 3,000 patent. The Applicant respectfully requests that the Examiner withdraw this grounds for rejection.

The Office Action questioned the lack of antecedent basis for the limitation “the volume” in Claim 4. The Applicant respectfully traverses this rejection. Claim 4 includes the limitation “complexing the plurality of Zn ions being dissolved in *the volume of DI water*.” The original
15 Claim 2 recites “a volume of deionized (DI) water,” thereby providing antecedent basis for “the volume of DI water” in Claim 4. The Applicant respectfully requests that the Examiner withdraw this grounds for rejection.

The Office Action stated that it appears that “GN₂” should be replaced by “N₂” in Claim 9. The Applicant respectfully traverses this rejection. In paragraph 0015 of the original
20 specification, GN₂ is identified as gaseous nitrogen. Further, Claim 9 recites “wherein said gaseous flow comprises gaseous nitrogen (GN₂).” Thus, GN₂ is consistently and clearly identified as gaseous nitrogen. The Applicant respectfully requests that the Examiner withdraw this grounds for rejection.

The Office Action raised the lack of antecedent basis for the limitation “the volume of
25 water” in Claim 10. Claim 10 is amended herein to correct a typographical error by replacing “the volume of water” by “the volume of DI water.” The Applicant respectfully requests that the Examiner withdraw this grounds for rejection.

3. Claims 1-10 were rejected under 35 U.S.C. 102(e).

Claims 1-10 were rejected based on 35 U.S.C. 102 (e) as being anticipated by Lopatin et al. (US 6,515,368). The '368 patent includes Sergey Lopatin (the Applicant), and Alexander Nickel as inventors. Declarations under 37 CFR 1.132 by Sergey Lopatin and Alexander H. Nickel are herein attached, establishing that the claimed invention of the present application, disclosed in the '368 patent, but not claimed therein, was invented by the Applicant.

4. Claims 1, 4 - 6, 8, and 9 were rejected under 35 U.S.C. 103(a).

Claims 1, 4 - 6, 8, and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Alling et al. (US 2002/0127847) in combination with Mahneke (US 6,398,926) and Kowalski (US 3,706,635). In rejecting Claim 1, the Office Action suggested that Alling disclosed all the limitations on Claim 1 except rinsing and drying, and that Mahneke discloses rinsing and drying the Cu-Zn thin film.

The Applicant traverses the combination of Mahneke and Kowalski with Alling. The statutory basis for rejections of the aforementioned claims provides that "...[a] patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made," 35 U.S.C. 103(a). Further, the Manual for Patent Examiners' Practice paragraph 2142 addresses the same basis for rejection, mandating that "...To establish a *prima facie* case of obviousness, three basic criteria must be met. **First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.** *In re Vaeck*, 947 F.2d 488, 20

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USPQ2d 1438 (Fed. Cir. 1991), MPEP Section 706.02(j). “**Mere fact that prior art may be modified to reflect features of claimed invention does not make modification, and hence claimed invention, obvious unless desirability of such modification is suggested by prior art. . .**”, *In re Fritch*, 922 F.2d 1260, 23 USPQ.2d 1780, at p. 1780 (Fed. Cir. 1992). Thus, either
5 a single reference including all the limitations of the claim, or motivation to combine references collectively including all the limitations of the claim, are required to establish prima facie obviousness.

Mahneke has been cited by the Office Action as providing “rinsing” and “drying.” The Office Action states that one skilled in the art would have combined Mahneke with Alling to
10 obtain the further advantage of preventing contamination of both sides of the wafer. However, merely pointing out that a combination has an advantage is not sufficient to justify such combination. Establishment of a *prima facie* case of obviousness requires showing that the combination is suggested or motivated by the reference. The Applicant believes that the Office Action has failed to show that Mahneke or Alling suggest or motivate their combination, and
15 therefore a *prima facie* case of obviousness has not been established. The applicant therefore requests that the rejection of Claim 1 based in the combination of Mahneke and Alling be withdrawn. Because Claims 4-6, 8, and 9 depend from Claim 1, the Applicant also request that the rejections of Claims 4-6, 8, and 9 also be withdrawn.

With respect to the combination of Kowalski with Alling, Kowalski is a 30 year old
20 patent describing electroplating to achieve a desired brightness, and is thus remote from Alling in both time and purpose. It is therefore highly unlikely that a semiconductor engineer, possibly not even born when Kowalski was filed, and working in a technology far removed from plating to achieve brightness, would be familiar with Kowalski. The Office Action states that one skilled in the art would have combined Kowalski with Alling because such combination would enable
25 admixing the chemical solution with a volume of water of the combination to be performed. However, the usefulness of a combination is not justification for combining two references. The Applicant believes that the Office Action has failed to show that Kowalski or Alling suggest or motivate their combination, and therefore a *prima facie* case of obviousness has not been established. The applicant therefore respectfully requests that any rejection based on the
30 combination of Kowalski and Alling be withdrawn by the Examiner.

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The Applicant further points out that Kowalski specifically teaches a unique complexing agent comprising a combination of EDTMP and HDEP. Kowalski therefore teaches away from the present invention which is directed to a solution including a single complexing agent. The Applicant respectfully requests that the rejections relying on Kowalski be withdrawn by the Examiner because Kowalski teaches away from the present invention.

5. Claims 2, 3, 7, and 10 were rejected under 35 U.S.C. 103(a).

Claims 2, 3, 7, and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Alling et al. (US 2002/0127847) in combination with Mahneke (US 6,398,926) and Kowalski (US 3,706,635) as applied to Claims 1, 4-6, 8, and 9, and further in view of Krishnamoorthy (US 6,486,533). As described above, the Applicant believes that currently amended Claim 1 is in condition for allowance, and that all the claims depending from Claim 1 (including Claims 2, 3, 7, and 10) are therefore also in condition for allowance. The Applicant therefore requests that the Examiner withdraw the rejections of Claims 2, 3, 7, and 10.

Further, Claim 2 includes a limitation that “all being dissolved in a volume of deionized (DI) water.” The Office Action does not describe a reference reciting “deionized water.” and therefore the Applicant believes that Claim 2 is in condition for allowance even if Claim 1 is not. The Applicant therefore respectfully requests that Examiner withdraw the rejection of Claims 2. Further, Claims 3 - 8, and 10 depend from Claim 2, and the Applicant therefore believes that Claims 3, 7, and 10 are in condition for allowance, and respectfully requests that the Examiner withdraw the rejections of Claims 3, 7, and 10.

Applicant further points out that the arguments against the combination of Mahneke and/or Kowalski with Alling argued in (3) above also apply to such combination with respect to rejections of Claims 2, 3, 7, and 10. The applicant therefore respectfully requests that any rejection of Claims 2, 3, 7, or 10 based on the combination of Mahneke and/or Kowalski with Alling be withdrawn by the Examiner.

The Office Action also states that one skilled in the art would combine Krishnamoorthy with Alling because such combination would enable formation of the chemical solution of the combination process to be performed and obtain further advantage of solving the diffusion and self-passivation problems in metalization structure. However, the Applicant believes that the

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Office Action has failed to show that Krishnamoorthy or Alling suggest or motivate their combination, and therefore a *prima facie* case of obviousness has not been established. The applicant therefore respectfully requests that any rejection based on the combination of Krishnamoorthy and Alling be withdrawn by the Examiner.

CONCLUSION

Claims 3 - 8, and 10 have been amended to correct typographical errors in the original application. New Claims 21 - 30 have been added, which include no new matter. Applicant respectfully submits that the presently claimed invention is patentably distinct over the cited references; and Applicant therefore believes that the pending claims are novel and non-obvious in view of the references cited in the Office Action Mailed April 9, 2003, as required by 35 U.S.C. 102 and 35 U.S.C. 103. Therefore, Applicant believes the present invention is patentable as claimed. In view of the foregoing amendments and remarks, favorable consideration by the Examiner, withdrawal of the present rejections, allowance of the pending claims, and passage of the present application to issuance are accordingly solicited. *The Examiner is cordially invited to telephone the undersigned for any reason which would advance the pending claims toward allowance.*

Respectfully submitted,



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